Message

From: Kay, Robert [rtkay@usgs.gov]
Sent: 4/3/2017 5:50:24 PM
To: Nordine, John [nordine.john@epa.gov]
Subject: Revised Nov. 2016 Monthly Progress Report for Techalloy site

John--I have reviewed Revision 3 of the November 2016 Monthly Progress Report for the Techalloy Facility in Union, Illinois. This review is restricted to assessing how well Autumwood Responded to the previous review.

1. At this point it's a minor consideration and I don't want to make this the basis for a revision 4, but the response for how the pumping rates for EW-1 and EW-2 were determined makes no sense.

Autumwood writes there was a flowmeter on the discharge line for the extraction wells and that a Mr. Johnson shut off EW-2 and "measured the flow" from EW-1 then shut off EW-1 and "measured the flow" from EW-2, noted EW-1 was pumping approximately twice what EW-2 was pumping, then figures out the pumping rate for each well based on the total volume pumped for the month.

Exactly how did Mr. Johnson "measure the flow"? Does the flowmeter provide a direct reading of the flow rate? Did he read the discharge rate from the flowmeter in gallons per minute each time? Does the flowmeter provide a reading of the total volume of water passing through the pipe? Did he measure the amount of time it took for a certain volume of water to be recorded by the flowmeter?

If a flowmeter was available to determine the flow rate (either by direct reading or by a calculation) why the hell doesn't Autumwood just come out and say "the flowmeter was read at the time and here's what the reading was" rather than going through this circuitous discussion? The impression I'm left with, in spite of Autumwood's implication, is that (at best) Mr. Johnson looked at how quickly the total volume of flow numbers were turning on the flowmeter and took a WAG on the relative flow rate for each well. As a result, we have a WAG for the flow rate from each well and a high level of uncertainty in the results of the calculations that use these values.

2. Given that
a. the data points required to confirm the presence and extent of capture near the EW wells do not exist,
b. modelling efforts required to more definitively identify the extent of the capture zone would require a fairly substantial effort that I have no confidence Autumwood can produce,
c. Autumwood has made at least a token effort to note the limitations of the Theis analysis for assessing capture extent,
d. I don't want to go to revision 4 in this document,
e. the hydraulic gradient in this area shown by figure 4.1 indicates that approximately 2 ft of drawdown at the projected "plume boundaries" should be sufficient to induce capture,
I can live with the inadequate discussion of capture presented.

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